Compliance, negativity, reinforcers, and responsiveness: covariates in cooperative mother-child interactions

Melissa Herring

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To the Graduate Council:

I am submitting herewith a thesis written by Melissa Herring entitled "Compliance, negativity, reinforcers, and responsiveness : covariates in cooperative mother-child interactions." I have examined the final electronic copy of this thesis for form and content and recommend that it be accepted in partial fulfillment of the requirements for the degree of Master of Arts, with a major in Psychology.

Robert G. Wahler, Major Professor

We have read this thesis and recommend its acceptance:

Anne McIntyre, Richard Saudargas

Accepted for the Council:

Carolyn R. Hodges
Vice Provost and Dean of the Graduate School

(Original signatures are on file with official student records.)
To the Graduate Council:

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Accepted for the Council:

Associate Vice Chancellor and Dean of The Graduate School
COMPLIANCE, NEGATIVITY, REINFORCERS, AND RESPONSIVENESS: COVARIATES IN COOPERATIVE MOTHER-CHILD INTERACTIONS

A Thesis
Presented for the Master of Arts Degree
The University of Tennessee, Knoxville

Melissa Herring
May 1998
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I must also thank my parents, Edith and Billy Herring, who have made everything in my life possible and who modeled the good parenting practices that I later came to study.

Lastly, there are numerous other people who have touched my life in some special way in the past two years. Thank you for all of the challenges, support, and good times.
ABSTRACT

Examined the free field home interactions of 34 normal mother-child dyads during a one hour observation. Observers coded child compliance, responsiveness and negativity, plus mother social reinforcement of child compliance, mother responsiveness, and mother negativity. These code categories were intercorrelated to assess mother influences on child compliance and child influences on mother responsiveness. As expected, mother responsiveness accounted for most of the variance in child compliance. On the other side, child negativity accounted for most of the variance in mother responsiveness. Results were discussed within a broad social reciprocity framework in which the distinctively different influences exercised by mothers and children were considered.
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CHAPTER I

INTRODUCTION

When mothers and their children engage one another cooperatively, these social transactions comprise a form of reciprocity known to foster the child’s personal growth (see Pettit, Dodge & Brown, 1988; Putallaz, 1987). The cooperation prototype is defined by child compliance with maternal instructions and mother’s positivity which is generated through her appropriate and timely reactions to her child’s behavior (see review by Dix, 1991). While these turn-taking social exchanges define the essence of cooperation, the breadth of what gets exchanged is not yet clear. There is evidence that infants and preschoolers sustain cooperative episodes through compliance or similar acts of accepting instructions or prompts by their mothers (La Freniere & Dumas, 1992; MacDonald & Park, 1984; Raver, 1996). Mothers’ support of the episodes involves specific acts of approval or acknowledgment (Shelton, Frick, & Wooten, 1996) and their more general responsiveness to the child (Parpal & Maccoby, 1985). The latter refers to mothers’ appropriate reactions to child compliance as well as to child responses outside the cooperative episodes (Stayton, Hogan, & Ainsworth, 1971; Westerman, 1990), while the former is focused on child behavior within episodes.

If child compliance can be influenced by its specific social consequences as well as by a broader pattern of social offerings, the boundaries defining maintenance
processes become ambiguous. At first glance it would seem obvious that maternal social attention contingencies ought to have a direct role in sustaining a child's compliance with the mother's instructions, because of abundant evidence showing that child compliance can be increased when mothers are taught to consequate these responses through acknowledgment or praise (see review by Wahler, 1976). However, these demonstrations are offset by descriptive studies of highly compliant children which failed to find evidence of selective maternal attention following their children's acts of compliance (Griest, Forehand, Wells, & McMahon, 1980; Johnson, Wahl, Martin, & Johnson, 1973; Lytton, 1979). In addition, several investigators have argued that instances of a mother's appropriate social contingencies for child compliance are merely parts of her broader pattern of contingencies for all child responses (Parpal and Maccoby, 1985; Wahler & Meginnis, 1997). In other words, the cooperative enterprise might largely be supported by a mother's responsiveness in contrast to her selective reinforcement.

Maternal responsiveness seems to operate as a social context for cooperation, making it likely that children will comply with their mothers' instructions and that the mothers will offer acknowledgment & praise following child compliance. If this is true, one could also postulate an opposite form of contextual influence in the form of maternal negativity or irritability. When a mother's mood is negative, she is apt to express anger, irritation, and to oppose her child's requests or instructions (Dix, 1991; Zeman & Shipman, 1996). This form of provocation seems to function as context
similar in an opposite sense to the function of responsiveness, in this case promoting the child's non-compliance and retaliation (Patterson, 1982; Snyder & Patterson, 1995)

While there is evidence pointing to the importance of maternal responsiveness as a covariate of child compliance (e.g. Parpal & Maccoby, 1985; Wahler & Meginnis, 1997), we have yet to see multivariate studies in which responsiveness, reinforcement, and negativity are examined as differential predictors of this child behavior. Furthermore, these same three variables ought to operate in the ways that children influence their mothers. In other words, child compliance might serve a reinforcement function for the mother's supportive actions, child responsiveness might create a contextual basis for maternal positivity, and child negativity ought to diminish her cooperation.

The present study was designed to shed light on the differential importance of these various components of mother-child reciprocity during free field home interactions of normal dyads. In line with our previous review of social exchange processes, we considered mother responsiveness and child compliance as the basic foundation of cooperation, largely because of abundant evidence on the adaptive function of child compliance and the documented role of maternal responsiveness in sustaining this child behavior. By adding maternal reinforcement of compliance, child responsiveness, and both child and mother negativity, we could then assess the combined and separate contributions of these social phenomena to that basic
foundation of reciprocity. Since we attempted to capture natural facets of mother-child interaction, our control of these exchanges was minimal, and thus, all inferences about mother-child reciprocity were based on correlational analyses of the measures.
CHAPTER II

METHOD

Participants

Thirty-four mother-child dyads were recruited through elementary schools by means of a letter to the parents. The sample was predominantly Caucasian and comprised of middle and upper middle class families in which 18 of the children were girls and 16 were boys (mean age of the children = 8.59 years; mean age of the mothers = 34.58 years).

Procedure

As mothers and their children announced a willingness to participate, a one hour home observation was scheduled at the mother's convenience. Ground rules of the one hour sessions were set as follows: Television sets turned off; no telephone calls; participants were restricted to mother and her school-recruited child, plus any other family member who wished to participate; all participants were to stay in their house during the observation.

Observers were undergraduate students whose course work included training in observation and their subsequent direct observations of families. Most of the family observations were conducted by one observer, who recorded child and mother interactions in a scoring booklet with the guidance of tape-recorded 15-second time intervals. In 20% of the observations, this observer was accompanied by a second
observer, and the pair conducted time yoked, but otherwise independent observations as reliability checks.

**Measures**

For demographic purposes, mothers completed a survey asking about age, education, income, race, and other indices of family status and composition.

Mother-child interactions during the one hour home observations were assessed through the Standardized Observation Codes-Revised (SOC-R; Cerezo, 1988). The SOC-R has been used in a number of observational studies with demonstrated reliability and validity (see Cerezo, 1988). The child and mother behaviors assessed for this study were as follows: **Instructions**, which included commands or requests specifying acts of compliance; **Compliance**, which included the percentage of instructions which were followed by acts of compliance; **Neutral approach**, which included any social overture devoid of positive or negative verbal or non-verbal valence; **Positive approach**, which included any physical or verbal expressions of affection or approval; **Negativity**, which included demands, opposing instructions, violating rules, and any physical or verbal expressions of disapproval; **Responsiveness**, which included “appropriate” reactions to all prosocial responses by the other person, divided by the sum of both appropriate and inappropriate reactions.

SOC-R codes were recorded in brief time intervals (15-sec), making it possible to examine temporal and sequential associations between the various child and mother responses. For purposes of this study, we were interested in four categories of such
associations: 1) Compliance, particularly when offered by the child, was both a
dependent measure and a potential positive reinforcer for the mother's responsiveness;
2) negative offerings (considered punishment) following any responses by either
person; 3) neutral or positive approaches by the mother following child compliance,
which were defined as potential positive reinforcers for compliance; 4) responsiveness
was defined as the percentage of "appropriate" reactions to all prosocial responses by
another person. This measure constitutes an index of positive social context, known
to enhance the likelihood child compliance. The classification of reactions as
appropriate or inappropriate was based on a common valence rule formulated and
tested by Dumas & Wahler (1985) and by Wahler & Meginnis (1997).

In our use of the common valence rule, we considered neutral and positive
approaches, compliance, and neutral or positive instructions as prosocial responses.
Accordingly, the person who reacts to these responses would do so appropriately if he
or she offered a matching prosocial reaction (i.e., neutral or positive approach or
compliance). Likewise, an inappropriate reaction was defined as a negative (non-
matching) response to such prosocial actions. Initially, we considered the matching of
negative social responses as part of the responsiveness index following our common
valence rule. However, such matches rarely occurred in this sample (10 of the 34
mothers and 5 of the 34 children), and internal consistency analyses revealed that
negative matching did not correlate with the total responsiveness scores for children or
mothers. Thus, the responsiveness index for all participants reflected the proportion
of prosocial matchings as defined in the formula: Matches/Matches + Non-Matches. Instances of nonreactions (i.e., ignoring) were not considered in applying the rule.

It is important to notice that responsiveness by children and mothers could occur within and outside social episodes in which mothers generated child compliance. By definition, a mother’s reinforcement of compliance (her offerings of neutral or positive approaches) is also included in the measurement of maternal responsiveness. However, since mother could also match other prosocial child responses (i.e., child positive or neutral social approaches), her responsiveness was a far broader pattern of matching than was true for her reactions to child compliance alone. Likewise, the children’s compliance with maternal instructions were acts of child responsiveness but represented only one way in which they could match their mothers’ prosocial actions.

While mother and child negativity could also occur during social episodes in which mothers attempted to generate child compliance, this class of aversive responses could also occur outside the episodes. Thus, negativity, like responsiveness, was a contextual measure because its definition reflected occurrences throughout the home interactions.

Data Analyses

Initial analyses entailed descriptive pictures of demographic measures and observer agreement in use of the SOC-R measures. Next, we rank-ordered the mean occurrences of child and mother behavior categories to provide summaries of their most to least likely social actions and probabilities of each person’s matching reactions.
to his or her partner's actions. These probabilities reflected mother and child responsiveness and each person's selective attention (i.e. social reinforcement) to the various behaviors of the other individual. The final analyses involved computation of Pearson r’s between all pairs of the six SOC-R measures, followed by multiple regression analyses to predict child compliance and mother responsiveness. Guided by our reciprocity assumptions and earlier findings, we expected mother responsiveness to account for most of the variance in child compliance, with mother reinforcement of compliance and her negativity contributing lesser amounts of unique variance. On the other side of reciprocity, we had no reason to expect a singular child measure to account for most of the variance in mother responsiveness. Thus, all three of the child influences (compliance, responsiveness, and negativity) were considered equal in their potential impact.
CHAPTER III

RESULTS

Reliability

Observer agreement in coding a 20% subset of the home sessions with the SOC-R was computed through intraclass correlation coefficients (ICC.) Since total session scores were the substantive data for our principal analyses, we compared these scores between observers. Across pairs of observers, ICC's for each score were as follows: Mother Responsiveness = .98; Child Compliance = .79; Mother Reinforcement of Child Compliance = .81; Mother Negativity = .86; Child Negativity = .88; Child Responsiveness = .87. As the coefficients show, observers were in good agreement in their coding of SOC-R measures, supporting the credibility of this data set.

Rankings of Response Probabilities and Their Social Contingencies

A summary of the six measures during the one-hour home observations is presented in Table 1. Notice that both mothers and their children were highly responsive to one another, the children were highly compliant, and mothers showed moderate tendencies were to reward compliance through positive or neutral reactions. Negativity by either member of dyads was unlikely, but the children were more apt to be negative than their mothers.
Table 1. Means and Standard Deviations of Six Mother and Child Measures Derived from One Hour of Home Observation (N = 34)

<table>
<thead>
<tr>
<th>Behavior</th>
<th>Mean Percent Occurrence</th>
<th>Standard Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mother Responsiveness</td>
<td>.962</td>
<td>.061</td>
</tr>
<tr>
<td>Child Responsiveness</td>
<td>.937</td>
<td>.132</td>
</tr>
<tr>
<td>Child Compliance</td>
<td>.921</td>
<td>.146</td>
</tr>
<tr>
<td>Mother Reinforcement of Compliance</td>
<td>.25</td>
<td>.143</td>
</tr>
<tr>
<td>Child Negativity</td>
<td>.043</td>
<td>.089</td>
</tr>
<tr>
<td>Mother Negativity</td>
<td>.023</td>
<td>.027</td>
</tr>
</tbody>
</table>

Table 2 presents mean frequencies of the four keystone child and mother response categories used to compute indices of responsiveness. Adjacent to each response are mean frequencies of appropriate (i.e. matching) reactions offered by the other member of the dyad, and the far right column lists the proportion of responses consequated by these reactions. This table yields a picture of the most and least frequent social responses produced by the dyad and the relative probability of matching reactions. In reference to the former picture, notice that the most common response by mothers and children was neutral or positive social approach and the least common for both was negativity. Between these extremes, the two groups differed in
Table 2. Means of Four Child and Mother Response Categories, Means of Their Appropriate Reactions to the Four Categories, and the Proportion of Responses Consequated by These Reactions

<table>
<thead>
<tr>
<th>Response Consequated</th>
<th>Appropriate Reaction</th>
<th>Proportion of Responses</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Child</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Neutral/Positive Approach</td>
<td>124.20</td>
<td>Neutral/Positive</td>
</tr>
<tr>
<td>Compliance</td>
<td>17.55</td>
<td>Neutral/Positive</td>
</tr>
<tr>
<td>Negativity</td>
<td>9.00</td>
<td>Negative</td>
</tr>
<tr>
<td>Instructions</td>
<td>3.20</td>
<td>Compliance</td>
</tr>
<tr>
<td><strong>Mother</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Neutral/Positive Approach</td>
<td>116.10</td>
<td>Neutral/Positive</td>
</tr>
<tr>
<td>Instructions</td>
<td>18.60</td>
<td>Compliance</td>
</tr>
<tr>
<td>Negativity</td>
<td>5.26</td>
<td>Negative</td>
</tr>
<tr>
<td>Compliance</td>
<td>1.90</td>
<td>Neutral/Positive</td>
</tr>
</tbody>
</table>
their frequencies of instructions and in their likelihood of immediate\(^1\) compliance, with the children being less instructive and more compliant.

By examining the relative probabilities of matching reactions to these four response categories, it is possible to infer differential or selective reinforcement tendencies by the mothers and children. Notice that the mothers' preference was to reward child instructions, followed by child neutral/positive approaches. Child compliance and negativity were the least likely targets for appropriate maternal consequences. Our particular interest in this analysis was to examine the rank order status of child compliance as the mothers' preferred target for reward. Interestingly, these findings suggest there was no such preference.

Concerning children's selective reinforcement tendencies, we had no hypotheses about which maternal response they might prefer. As the rankings suggest, they imitated their mothers' tendencies to focus on instructions as their preferred target. In contrast to mothers, children then seemed to home in on mother compliance and mother neutral/positive approaches. Finally, similar to their mothers, the children were least likely to consequate instances of negativity.

**Correlational Findings**

Table 3 presents correlations between all pairs of the measures for the 34 children and their mothers. Notice that all pairs were significantly correlated, and, as expected mother and child negativity were positively correlated with each other and

\(^1\)The Compliance percentage in Table 1 includes delayed compliance.
Table 3. Pearson r's for All Pairs of Measures Across the Total Sample of Mothers and Children

<table>
<thead>
<tr>
<th>Behavior</th>
<th>Mother Responsiveness</th>
<th>Child Responsiveness</th>
<th>Child Compliance</th>
<th>Mother Reinforcement of Child Compliance</th>
<th>Child Negativity</th>
<th>Mother Negativity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mother Responsiveness</td>
<td>---</td>
<td>.67***</td>
<td>.55**</td>
<td>.49**</td>
<td>-.77***</td>
<td>-.85***</td>
</tr>
<tr>
<td>Child Responsiveness</td>
<td>---</td>
<td></td>
<td>.89***</td>
<td>.59**</td>
<td>-.93***</td>
<td>-.57**</td>
</tr>
<tr>
<td>Child Compliance</td>
<td>---</td>
<td></td>
<td>.38</td>
<td>-.81***</td>
<td>-.55**</td>
<td>-.49**</td>
</tr>
<tr>
<td>Mother Reinforcement of Child Compliance</td>
<td>---</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Child Negativity</td>
<td>---</td>
<td></td>
<td></td>
<td></td>
<td>.72***</td>
<td></td>
</tr>
<tr>
<td>Mother Negativity</td>
<td>---</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*** = p .0001  
** = p .001  
* = p .04
inversely correlated with the four prosocial measures. Also as expected, the highest correlations were for measures within children and within mothers, in contrast to measures between members of the dyads. Concerning the latter, notice those relevant to our hypothesis about mother influences on child compliance. In line with the hypothesis, mother responsiveness was more highly correlated with child compliance (.55) than was her reinforcement or negativity (.38 and -.41). In contrast, it would appear that the children's negativity had more to do with mother responsiveness (-.77) than did the children's responsiveness (.67) or their compliance (.55).

In pursuit of the maternal and child influence hypotheses, we conducted hierarchical regression analyses to predict child compliance and stepwise regression analyses to predict mother responsiveness. Consistent with our hypotheses that maternal responsiveness would account for most of the variance in child compliance, we first entered the responsiveness variable. In this model, mother responsiveness accounted for 28% of the variance in child compliance ($R^2 = .276, F(1,33)=13.59, p=.0001$). Neither of the other two models, which added mother reinforcement and mother negativity accounted for further variance in child compliance.

Since we had no hypothesis about the differential importance of child contributions to mother responsiveness, we used a stepwise model to find the most significant child predictors. In step 1, child negativity accounted for 60% of the variance in mother responsiveness ($R^2 = .601, F(1,33)=48.39, p=.0001$). With step 2, child responsiveness added only 2% in predicting mother responsiveness ($R^2 = .627,$
[F(2,33)=26.07, p=.45), but this additional contribution was not statistically significant (F(2,33)=2.09, p = NS). The addition of child compliance did not account for further variance in maternal responsiveness.
CHAPTER IV

DISCUSSION

The findings of this study replicate the existing research portraying mother responsiveness as an important predictor of child compliance (Lay, Waters, & Park, 1989; Parpal & Maccoby, 1985; Wahler & Megannis, 1997) Also consistent with previous research (Griest et al, 1980; Johnson et al, 1973; Lytton, 1979), we found no evidence that these mothers selectively reinforced their children's compliance, and, of course, the mother reinforcement measure did not contribute significant variance in the prediction of compliance. Surprisingly, the mothers' negativity also dropped out of the prediction process when pitted against the mothers' responsiveness. However, previous studies (see Patterson, 1982) documenting the power of maternal negativity to disrupt compliance had not contrasted this power with that of maternal responsiveness.

Turning to the question of what children do or don't do to affect their mothers' responsiveness, a different picture of social influence emerged in the present findings. While the children's responsiveness was more important than their compliance in predicting maternal responsiveness, these two sources of support proved insignificant when contrasted with the children's negativity. In essence, child negativity accounted for all of the variance in the prediction of mother responsiveness.
These findings have a bearing on the figure-context model of social influence outlined earlier in this paper. While it makes sense to assume that child compliance and mother acknowledgment/approval constitutes a self-sustaining feedback loop, it is also evident that this loop is the figural part of a larger social exchange process. Responsiveness and negativity comprised this larger context because these social events could and did occur outside the episodes in which mothers generated child compliance. The fact that mothers' responsiveness was the major covariate of child compliance suggests that any reinforcement effect exercised by maternal contingencies for compliance was context dependent. In other words, the previously outlined child-mother feedback loop was not self-sustaining.

The singular covariation between child negativity and maternal responsiveness suggests that these individuals cooperated through very different guidelines. The children may have complied because they valued the positive context orchestrated by their mothers' responsiveness, but the mothers' orchestration seemed to be based largely on avoidance motivation. As long as their children did not behave negatively, these mothers offered appropriate and timely reactions to the prosocial things said and done by the children, who in turn offered obedience and their own responsiveness. However, despite the positive nature of these child offerings, they had little influence when compared to the children's infrequent but potent negativity.

The "gun-shy" nature of these mothers stands in stark contrast to their children's prosocial readiness to interact. Clearly, social negativity was more salient to
the mothers than to their children, possibly because of its relevance to a central task of child care - the fostering of compliance. This task requires skill, persistence, and an ability to stay focused when the child exhibits negativity (Dix, 1991). The latter problem is apt to disrupt parent responsiveness (Lay, Waters, & Park, 1989) unless the parent is prepared to set limits and, thus, avoid being provoked into an escalating exchange of negative responses (see Patterson, 1982). Since children do not labor under the same socialization standard, their decisions to comply or to oppose might be less complex and largely based on a singular feature of parent behavior (i.e. responsiveness).

In line with Bell's 1968 arguments for the study of child effects on parents, the present findings offer some specific guidelines for research on the mother responsiveness / child compliance connection. Given the mother's success in minimizing child negativity, the youngster's own capacity to be responsive could emerge as a central guideline for responsive mothering. When we later omitted child negativity in our regression analyses, the children's responsiveness accounted for 44% of the variance in mother responsiveness, \( R^2=.431, F(1.33)=25.96, p=.0001 \) suggesting a means by which children might "socialize" their mothers. Apparently, responsiveness may beget responsiveness and while directionality could not be confirmed in our study, this stepwise model of child effects offers tenable hypotheses for further research. The model suggests an experimental research strategy geared to interventions that will control child negativity and mother awareness of child
responsiveness. Thus, if child negativity is reduced through mother's use of time-out, would child responsiveness account for more variance in mother responsiveness? Given this intervention, could the predictive function of child responsiveness be enhanced through another intervention designed to help mother pay attention to her child's appropriate and timely reactions to her behavior? These experimental tests of the correlational linkages could clarify causality and open new avenues for practical application of the findings.

Perhaps the most compelling possibility with regard to causal linkages and practical application concerns the stimulus context generated by these mothers and their children. If it is indeed true that responsiveness and negativity are the central determinants of cooperative exchanges between mother and child, a means of coordinating these contexts might be at hand. By helping mothers and children to accentuate their responsive social exchanges, both should realize reduced effort and frustration in implementing those necessary instruction-compliance work episodes.
REFERENCES
REFERENCES


Melissa Herring was born in Shreveport, Louisiana on July 22, 1973. She attended schools in the public system of DeSoto Parish Louisiana. She graduated from the Louisiana School for Math, Science, and the Arts in May, 1991 with a Humanities concentration. She then attended Louisiana State University where she received a Bachelor of Science in Psychology, Magna Cum Laude, with a minor in English in May, 1995. Her undergraduate research experience included work with children with developmental disabilities and disruptive behavior disorders, as well as, suicidal adolescents. After working for at a psychiatric hospital for children and adolescents, she began the doctoral program in clinical psychology at The University of Tennessee, Knoxville in September, 1996.

She is currently pursuing the doctoral degree while working in the University of Tennessee Psychological Clinic and teaching undergraduate psychology courses. Her research interests include the prevention of delinquent behavior and the development of interventions for children with conduct disorders and their families. She is also interested in peer relations of children and adolescents and the generalization of treatment effects across settings.